

Recent Advances in Multiple Sclerosis Research

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Abstract: The chronic autoimmune disease known as multiple sclerosis (MS) is characterized by inflammation, demyelination, loss of neurons, and gliosis (scarring). Our object to review MS pathophysiology, etiology, immunopathogenesis, symptoms and treatment the most prevalent autoimmune disease affecting the central nervous system (CNS) is multiple sclerosis (MS). It is a debilitating, chronic, demyelinating illness brought on by an attack by an inflammatory disease that causes the progressive loss of the myelin sheath that envelops the axons of neurons. Epidemiology indicates that the average age at onset is between 20 and 40 years old. MS is widespread in both Europe and America and is more common among women. Pathological features include oligodendrocyte loss, axon demyelination, and areas of inflammation (plaques). The incidence of MS is rising, especially in women, and there is a global latitude gradient in its prevalence. Although the exact cause of multiple sclerosis is unknown, epidemiological evidence suggests that both genetic and environmental factors play a significant role. There are four clinical forms of MS, such as secondary progressive MS (SPMS), Primary progressive MS (PPMS), and Progressive relapsing MS (PRMS), of which relapsing remitting (RRMS) type is the most common. An essential component of treating multiple sclerosis is managing its symptoms. Identifying and treating the various symptoms accurately results in increased quality of life for multiple sclerosis sufferers. The symptoms of multiple sclerosis can be classified as primary, secondary or tertiary. The main symptoms, which include ataxia, weakness, and sensory loss are directly associated with axonal loss and demyelination. Secondary symptoms like infections of the urinary tract due to the retention of urine are caused by the principal symptoms. The social and psychological repercussions of the illness lead to tertiary symptoms as reactive depression or social isolation. Fatigue and weakness, diminished balance, stiffness, and difficulties with gait as well as depression and cognitive deficits, are typical symptoms of multiple sclerosis. Deficiencies in the bowel, bladder and sexual organs, loss of vision and sensation and neuropathic pain. The most popular treatments for multiple sclerosis include disease-modifying medications such fingolimod, dimethyl fumarate, natalizumab, and interferon- beta. Real-world studies are required to demonstrate the effectiveness and safety of these drugs

Keywords: Multiple sclerosis, Demyelination, Inflammation, gliosis, myelin sheath

Abbreviations: MS =Multiple sclerosis, CNS =Central nervous system, SPMS=Secondary progressive MS, PPMS=Primary progressive, PRMS=Progressive relapsing MS, RRMS= Relapsing remitting MS, MMPs= matrix metalloproteinase, MHC= = Major histocompatibility complex, BBB=Blood brain barrier, MRI= Magnetic resonance imaging, LA=alpha-linoleic acid, CBT=Cognitive behavioral therapy